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DIVISION OF HORTICULTURE

GARDEN MAKING ON VACANT LOTS
AND THE
HOME VEGETABLE GARDEN

By W. T. MACOUN,
Dominion Horticulturist

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GARDEN MAKING ON VACANT LOTS

AND THE HOME VEGETABLE GARDEN

By W. T. MACOUN, *Dominion Horticulturist.*

The British Empire will need all the food that can be produced in 1917. Canadians can do much, if they will, in increasing the production of vegetables. Everyone in cities and towns with vacant land should consider seriously whether they can utilize it for the growing of some kind of vegetable food. By growing vegetables for one's home use, this food, which would otherwise have been bought, will be available for someone else. If twenty-five dollars is saved in the food account, one will even more cheerfully contribute to the relief of those suffering for lack of food.

Vegetables fresh from the garden are much more appetizing than those which have been gathered for some time. If vegetables are grown at home, more vegetables will be eaten than if they are bought, and there will be less desire for the expensive kinds of food.

Not only should the private citizen who has land utilize it to the fullest extent, but those who have not should be enabled to get the use of vacant land which is lying idle, and it is to encourage the organization of associations in cities and towns throughout Canada for the utilization of vacant lots, that some of the results already obtained in Toronto, Ottawa, Regina and Calgary are herewith given.

TORONTO VACANT LOTS CULTIVATION ASSOCIATION (INCORP.) IN CO-OPERATION WITH THE ROTARY CLUB.

The cultivation of vacant lots in Toronto has been very successful, and as this has been due to a large extent to the character of the organization through which the work was done, the following particulars in regard to the association and the results obtained should prove useful to those contemplating such work in 1917. This information has been furnished by the secretary, Mr. Geo. Baldwin.

In 1915 the Toronto Vacant Lots Cultivation Association and the Toronto Rotary Club V. Cultivation started the gardening movement separately, each looking after its own gardens, and had between them about 120 gardens, the success of which warranted them in going ahead again in 1916, when they had upwards of 300 gardens between them, which also resulted in success. In the fall of 1916 the two associations held a joint meeting and decided to amalgamate, electing a president, two vice-presidents, a secretary and superintendent, a treasurer and twelve directors. The details of the work being left to the secretary and superintendent. The association is kept up by voluntary contributions. The association first secures the vacant city lots from public spirited citizens who are willing to have the idle land put to such deserving use. The land is then ploughed, harrowed and manured free, the only charge made being that for the seed which is obtained at wholesale prices, the lot-holders getting it much cheaper than if they bought it themselves. The secretary superintends the manuring, ploughing, harrowing, etc., in fall and spring, giving instruction where needed, and personally runs a demonstration plot, where on Saturday afternoons and evenings plot holders are given any information in regard to the seeding and care of their plots that they desire. A large number of the plots was taken for 1917 early in February.

The approximate retail value of the crops from the 300 gardens in 1916 was \$9,000. The estimated value of the produce grown on some of the plots was \$35, \$33.30, \$53.30, \$52.70, \$48, \$70.65 and \$59.10. There are from 4,000 to 5,000 square feet in a plot.

A detailed statement of the value of produce sold from one plot is as follows:

Potatoes, \$10; carrots, \$5; cabbage, \$4; beets, \$5; beans, \$5; lettuce, \$1; tomatoes, \$5; squash, \$1; cucumbers, \$4; corn, \$2; turnips, \$2; radish, \$1; celery, \$3. Total, \$48.

Card issued to Plot Holders.

Below will be found a copy of the printed matter on a card issued to each plot holder:—

Phone June. 748.

Toronto Vacant Lots Cultivation Association (Incorp.)
in co-operation with

The Rotary Club of Toronto.

GEO. BALDWIN, F.R.H.S., Secretary and Superintendent,
Office, 758 Dovercourt Road.

This is to certify that.....

Address has been granted the use of Lot No.
subject to all the rules and regulations of the Toronto Vacant Lots Cultivation Association.
This card is to be used for identification purposes, and must be carried by the owner, and
shown on request to the police, and any persons assigned to protect the properties.

Toronto Vacant Lots Cultivation Association (Incorp.)

(Occupant's signature).

Per

On the back of the card is printed the following:—

RULES.

1. All gardens must be cultivated thoroughly as the Superintendent directs.
2. The privilege to cultivate any garden shall not be transferred.
3. The use of the garden is accepted subject to the same terms of eviction as those under which the Association holds the lands, namely, ten days' notice.
4. No tool boxes or shanties shall be erected on the gardens unless by permission of the Superintendent.
5. Each gardener must turn in a report at the close of the season of all crops grown; whether sold or used.
6. Any gardener who changes his address must send his new address to the office of the Superintendent immediately.
7. At the end of the season all stems, framework and other temporary materials placed on the lot by the gardener shall be removed.
8. Failure to comply with any of the above rules, or neglect to obey the directions of the Superintendent, may cause forfeiture at any time of the privilege to use the garden.

ST. ANDREW'S CHURCH GLEBE GARDENS, OTTAWA, ONT.

St. Andrew's Presbyterian Church, Ottawa, owns a considerable area of land in the city known as the "Glebe." Some fifteen or more acres in one block without any houses on it were lying idle when the war broke out, and, inspired by the campaign of Patriotism and Production carried on by the Dominion Government during the winter of 1914-15, the Church, at its annual meeting in March, 1915, appointed a committee of three to organize the work and granted a sum of money to prepare the land for garden plots.

On examination of the Glebe land in the spring of 1915 it was found that the greater part of the property was very suitable for garden plots, this land having been used successfully some years previously for a market garden. As the land had been in sod for a number of years it was necessary to break this up before laying the ground out into plots in order to encourage the prospective gardeners to utilize it. The land was ploughed and thoroughly harrowed, and then members of the Committee divided it into plots 50x100 feet. Stakes were driven down to mark the boundaries. Roads were left between the different tiers of plots. The plots were numbered, there being 128 in all.

An advertisement was put in the daily papers inviting any citizen of Ottawa to take a plot. The invitation was made general as the Committee was anxious to make a success of the undertaking and it was not at all certain that there would be many applicants. The number of applications, however, surpassed all expectations, as 175 persons applied for the 128 plots, and many more were kept from applying because they knew there were none available. The plots were given out as far as possible in order of application, those applying first having the first choice. The eagerness to obtain plots was remarkable. Those who obtained them were given until May 26th to begin work. A number did not begin by that time and their plots were given to others more anxious to have them. They were given until the middle of June to have at least half of their lots planted, and some others who failed to do the necessary work lost their plots, which were given to others eager to get them. By this system of elimination of the least enthusiastic there were very few plots where good work was not done. Notwithstanding the difficulty the gardeners had in controlling the couch grass which was very troublesome, the crops grown on these plots were satisfactory on the whole, and it is believed that much good was done. Some of the workers had an abundance of potatoes and other vegetables for the winter, which have been especially appreciated owing to the high price of potatoes just now.

A patriotic vegetable competition was made possible by prizes donated by members of St. Andrew's church and others, and added very much to the interest of the gardens.

A few examples of what were grown on the Plots.

- Plot No. 31, 10 bags of potatoes, 300 ears of corn, 1,200 cucumbers and 300 tomatoes.
 Plot No. 13, 12 bags of potatoes, a liberal supply of corn, pumpkins and squash.
 One squash measured 80 inches around and weighed 125 lbs.
 Plot No. 20, 9 bags of potatoes, a large crop of tomatoes, cucumbers and beets.
 Plot No. 110, potatoes, 6 bushels; carrots, 1 bushel; turnips, 1½ bushels; beets, 2 bushels; cabbage, 36 heads; green beans, 16 gallons; peas, shelled, 10 quarts; onions, 2 gallons; corn, 13 dozen ears; tomatoes, 314 lbs. ripe, and 2 bushels green.
 Plot No. 121, for a family of seven, a constant supply of green beans, July 15 to October 1; potatoes, 6 bags, and sufficient carrots, turnips, parsnips, onions and cabbage for the summer, fall and winter supply.

The rules under which the gardeners obtained their plots were made as simple as possible and are as follows:—

1. Plots on which cultivation is not commenced on or before May 25, 1915, will be liable to confiscation.
2. No crops shall be sown or planted within two feet of any boundary of the plot.
3. All crops front on a road. Where potatoes are planted, they must be planted at the back end of the plot. The rows to run across the plot. This is to make it easier to spray.
4. A reasonable amount of care is expected; otherwise, the plots are liable to confiscation.

In 1916, notwithstanding the very unfavourable season, the interest in the gardens was continued, and by February 1, 1917, all of the 128 plots available were taken up for this year.

Since the first year the committee has spent very little money in connection with these plots, and, while the members of the committee are always glad to give advice, the plot holders now manure and prepare their plots and buy the seeds themselves. Certificates of merit were presented to those having the eight best plots in 1916.

REGINA VACANT LOT GARDENS.

Between fifteen and sixteen acres of property within the city limits, formerly waste land, are now under cultivation and giving wonderful returns to those who are willing to expend a little energy, as a result of the Vacant Lot Garden movement.

From many standpoints the movement has been a great success in Regina. It has been instrumental in improving the general appearance of the city and at the same time worked wonders along the lines of encouraging gardening and the growing of such vegetables and small fruits as thrive well here. In fact, most of the vegetables which grow elsewhere, thrive in the soil natural to this district and attain wonderful proportions.

Regina "gumbo," while distinctly unpleasant underfoot, when disturbed by a light rain, gives great returns for a little judicious use of the spade and hoe. Not only wheat but potatoes and all kinds of vegetables produce record crops under favourable weather conditions.

Started in 1912.

The Vacant Lot Garden movement commenced its existence in the fall of the year 1912, when a small body of men gathered together for the formation of a Town Planning Association. One of the departments of this association, the aim of which was a better and finer city in which to live, was formed for the reclamation of the vacant property about the city which was growing to unsightly weeds, and afforded protection to all kinds of insects and flies.

Active work was commenced in the spring of 1913, under the City Planning Association. It was uphill work at first. It seemed hard to get people interested in the movement. It was something new, and there were those who looked askance at the project. Some of those originally identified with the movement have never left the helm, and have steered the destinies of the scheme until to-day. Even its greatest enemies have to acknowledge its success.

The number of lots under cultivation the first year were not many, and most of these were on raw prairie land, some of it broken for the first time. For this reason the yield was not heavy, and there were those who were inclined to be discouraged with the result of their efforts.

A Critical Period.

The second summer was the most critical period. The officials of the movement realized this and prepared to meet it. A co-operative seed-buying scheme was organized and all the gardeners profited in the purchase of seeds. The crops were satisfactory

this season. A greater number of people engaged in gardening and the movement passed the critical stage and was placed on a good sound basis. The crop of 1914 was a record-breaker up to that time. While there were more engaged in gardening in 1915 than in any previous year the season was a poor one. Heavy frost killed many of the lighter vegetables in the middle of the summer, and many conditions united to retard the growth for the remainder of the season.

1916 a Record Season.

Not in the history of the movement has the scheme reached the record of this season. Local gardeners say that the season has been more favourable for the growth of vegetables than any previous season for years past. It is estimated that vegetables valued at \$4,500 will be grown on the Vacant Lot Gardens of the city this season. This figure is reached by estimating \$25 revenue per lot. There are 185 lots making the total value of products \$4,600, so that a very conservative estimate of the value of the products would be roughly \$4,500.

Corn and Tomatoes.

One vacant lot gardener estimated that he will take 21 dozen ears of corn from two rows fifty feet long. He has already had several good messes from this corn patch. Tomatoes are doing particularly well this season. Several gardeners have been using tomatoes from their vines for several weeks past. Cabbage, carrots, beets, lettuce, radish, cucumbers, squash, beans, peas and all the common vegetables are to be found in profusion, while from the standpoint of quantity potatoes head the list by quite a lead.

The idea of those at the bottom of the movement was to beautify the city as much as possible, and Vacant Lot Gardeners have been encouraged to grow flowers along the front of their lots facing on boulevards and streets. Many of the lots are located in downtown streets, on Sixteenth avenue and on car lines. The movement has done wonders in the way of eradicating noxious weeds within the limits of the city. Vacant lot gardens on Scarth street on the site of the old city hospital grounds, are now producing some of the finest of vegetables, whereas in 1912, it was impossible to grow a crop of oats on the same property because of the rank growth of thistles.

With the success of the movement, the Executive have now been able to reduce the cost of production to the producer, and the cost of breaking and preparing the lots by means of a co-operative scheme, is now lower than in any previous season. A market for the disposal of products grown on vacant lot gardens was established for one or two seasons and was found to work well.

Assistance from the city council was received the first year but all the money received has since been returned. Two dollars is charged each plot holder for breaking up new land and one dollar where land has been broken before. The lots are 25 x 120 feet.

Regina's Slogan for 1917.

"The Vacant Lot Garden Movement for National Service" will be the slogan of the Vacant Lot Garden Association for 1917. The association is anxious to make its work this year serve a national purpose, even more than in the past. Those who cultivated lots last year are now enjoying the vegetables they produced and are thus reducing the cost of living, and keeping so much capital from going out of the city and province for foreign products.

In view of the fact that every pound of food raised is a contribution to the national service campaign, the Vacant Lot Garden Society will aim at greater production during the present year than any time in the past.

N.B.—The above information was kindly furnished by Mr. Henry Miller, Secretary Treasurer of the Vacant Lot Garden Association, Regina.

CALGARY VACANT LOTS GARDEN CLUB.

The Calgary Vacant Lots Garden Club was organized in 1914 in which year there was a membership of 173. In 1915 there were 450 members, or an increase of 277. In 1914 the number of lots cultivated was 24. In 1915 it was 976, or an increase of 733.

In 1916, notwithstanding the shortage of labour, and the fact that 200 members of previous years had joined the colours, leaving 400 lots on hand for which new workers had to be found, all of these were taken up with the exception of 25 plots, and over a hundred new lots were broken, making a total of 990 lots cultivated by the club in 1916, a slight increase over 1915. The officers of the Association consist of an Honorary President, who is Mayor of the city, a president, a vice-president, a treasurer and a secretary. The headquarters of the club are at the City Hall.

The first year's operations were confined mainly to the centre of the city, but in 1915 they were much more widely scattered.

The membership has consisted of persons in all walks of life, many women being among the active members.

Following are some extracts from the secretary's report for 1916:—

"The first important point is that the success of the work depends to a large extent on the individual worker himself. The opportunities, supervision and instruction which we offer can avail little or nothing unless the man behind the hoe is willing to use his brains and his hands and carry them into effect. Just so far as he does this is he rewarded with success. In this connection I wish to say that although it has been necessary to remind some few of their duties no one has had to forfeit his garden on account of neglect. The splendid results of the present season's work, the great improvement in the yield and quality of production is largely due to the painstaking care and incessant labour the majority of the members have given to the cultivation of the crops throughout the season, and great credit is due to every individual worker. As this work is being done by the members in their leisure time without interfering with their daily occupations, it means that an immense amount of wealth to this community, is being created, and that from a source heretofore unproductive.

"Viewing the work from a commercial standpoint, paying the worker for his time in labour on the lots, we find that the cultivation of vacant lots and the production of food stuffs is a sound and profitable investment. One member of this club assured me that his expenses on a 50-foot lot including ploughing, seeding and estimated value of labour was less than \$10, and his returns were over \$70. This achievement is by no means a solitary or even difficult one, and is within the reach of all. The sane and logical solution of the high cost of living, the problem that is facing all nations at the present time, is, production, and more production. This is no longer an optional matter, it becomes the duty of every one to produce and encourage production to the fullest extent.

"Through the spring months, previous to the opening of the season, the Vacant Lots Garden Club, in conjunction with the Horticultural Society, carried on a series of lectures on gardening which were held in various school houses of the city, and at the Public Library. The educational feature of the club's work has also been extended through articles on gardening written by your secretary, and appearing in the local press. Your directors made their annual tour of inspection of the vacant lot gardens during the month of August. His Worship the Mayor, the Commissioners, Aldermen and many prominent citizens taking part. The trip was confined to the central portion of the city and included a visit to the Civic Nurseries where Park Superintendent Header had many interesting and beautiful things to show.

The Club has issued a folder with the announcements for 1917, part of the information on which is herewith given.

CALGARY VACANT LOTS GARDEN CLUB.

Bulletin of Information, 1917.

"A bigger season and a better one than ever."

How to join the Club.

Call at Headquarters, main floor of City Hall, where the Secretary will accept applications and supply all information. Letters will receive prompt attention.

The Club has a large number of lots from which applicants may select, but if a particular lot is desired, it will materially assist if the lot and block number and name and address of owner are secured beforehand.

Membership Fees.

The membership fee is \$1. Ploughing and discing costs \$1 per 25 ft. lot. Total cost for one lot, \$2; for two lots, \$3. A member is limited to two lots. Ploughing must be done by the Club's teams, but a member may dig his lots if done to the satisfaction of the club.

Membership Privileges.

Each member will receive (1) such special discounts on seeds, tools, etc., as the club can arrange for, on presentation of membership cards; (2) all the produce of his lots; (3) free expert advice; (4) the right to compete for special garden prizes; (5) the benefit of such various advantages as the club may be able to secure for its members.

Regulations.

1. Members will be expected to clear the lot of any rubbish or large stones in readiness for ploughing. 2. Members will be expected to cultivate the lots throughout the season. If weeds are allowed to grow the executive reserves the right to take over and cultivate the lot. This rule will be rigidly enforced. 3. Two persons may share a lot, but one person must be responsible. 4. Minors may secure lots by their parents making application and becoming responsible. 5. Members wishing to use city water should make application to the Waterworks Department for special permit. 6. It is contrary to a city by-law to allow piles of manure to stand on any lot.

The above information in regard to the Calgary Vacant Lots Garden Club has been kindly furnished by the acting-secretary, Mr. L. U. Fowler.

METHODS SUGGESTED FOR UTILIZING VACANT GROUND FOR GARDENS.

From the experience gained in several Canadian cities and towns during the past few years in utilizing vacant lots for garden purposes, the following methods are suggested for those who have not yet undertaken this work.

1. An organization should be formed, on the executive committee of which are, at least, two men, or women, who are enthusiastic and will be willing to devote some time to looking after the preparation of the land and the laying out of the plots.

2. Owners of vacant land should be invited to offer such property for garden making.

3. Assuming that a fairly large number of lots have been offered by their owners, it should be widely advertised that one of these is available to any citizen who will be willing to work it, experience having shown that all classes in the community are interested in this work.

4. It has been learned by experience that it is important for the organization to, at least, plough and harrow the land for the plot holders the first year. Few persons who have not done any gardening before can be induced to prepare land for seed sowing on their own initiative.

5. There are four methods by which funds may be raised to prepare the land.

(a) By an appeal to wealthy citizens for contributions.

(b) By a grant from the city or town council, if necessary on the understanding that the money will be returned by the plot holders when they have harvested their first crops.

(c) The city or town council might appoint a committee to carry out such work, the city to aid in every possible way. In order that a movement of this kind may have at least the greater sympathy of the civic officials it would seem desirable for the organization to have a room in the city or town hall for its meetings.

(d) By charging each plot holder a certain amount, for preparing the plot for him. The last method is the one which is likely to be the most satisfactory method for most cities and towns, and is the one recommended here.

For information in regard to rules or by-laws, the reader is referred to the accounts of the work of the several organizations in Canada referred to in this bulletin, as in them there will, no doubt, be found sufficient suggestions to enable by-laws to be drawn up for particular needs.

BOY SCOUTS CAN HELP.

Boy Scouts can be made very useful in encouraging garden making and the use of vacant lots. In Ottawa they were employed in 1915 by the Public Health Committee of the Local Council of Women in delivering vegetable seeds which had been donated for the purpose of encouraging the poorer people to make gardens. Seed can be obtained in bulk at a cheaper rate than in packages and could be put up in packages by the Scouts. The Scouts also delivered pamphlets on Vegetable Gardening. This personal touch did much, it is believed, to decide those to make gardens who had been in doubt before, as many people would accept seeds and pamphlets if brought to them who would not take the trouble to get them themselves.

THE HOME VEGETABLE GARDEN.

There is practically no part of Canada in which there are settlements where at least some kinds of vegetables cannot be grown and the great variety which it is possible to grow successfully even in the coldest districts is a surprise to many.

There is a growing demand for fresh well-grown vegetables, and a call for them in greater variety, but in many parts of Canada the people do not yet get a plentiful and varied supply.

If more vegetables were eaten there would not be the same need for the more expensive kinds of food, and if the vegetables were grown at home the saving would amount to a considerable sum at the end of the year.

While this is written mainly for the use of amateurs, it may be that the market gardener will find some information that will be of use to him.

Although it is not possible for some persons to grow their own vegetables there is a large proportion of the population who could easily raise an abundance of these palatable, delicious and nutritious food products if they cared to do so.

In the country there is plenty of room for a good vegetable garden and even in cities, towns and villages there is usually a sufficient area on the lot at the back of the house to grow enough vegetables to supply a large family during the summer months and to give away some to other people.

Situation of the Garden.

In cities and towns there is, of course, no choice in regard to the situation of the garden as one has usually no alternative, but the back of a lot. If large trees surround this lot or are even along one side of it, gardening will be more difficult and much less satisfactory than when there are none. Trees exhaust the soil of moisture and plant food and their shade often affects the crop adversely. Even where there are trees, how-

ever, fair success may be obtained with short season crops such as lettuce, radish, and spinach which can be grown early in the spring or in the autumn when the growth of trees is not very active. In the country the garden should be as near the house as possible and warm well drained soil should be chosen if there is such. It is usually the women of the household who look after the garden in the country, hence things should be made as convenient for them as possible. However, it is better to cultivate a few rows of garden vegetables in the fields with the root crops than to have no garden at all.

Preparation of the Soil.

To get the best results the soil should be brought into good tilth. When beginning gardening in cities and towns it is often found that many difficulties have to be overcome before the soil is in really good condition. Old cans, stones, bricks, pieces of wood, broken toys and many other things must be removed or buried so deeply that they will not be troublesome. Then it often happens that the subsoil from the cellar of the house has been thrown over the yard in order to level the ground. This is sometimes of great depth. This subsoil is usually either a stiff clay or sand. Clay, while it will give more hard work, is usually a much better material to start with than sand. If there is much coal ashes in the yard most of them should be removed altogether or buried in one corner of the yard. A little ashes mixed with the clay will help to make it more friable or more open, but there is little plant food in coal ashes and there should be a minimum of them in good garden soil. A mixture of sand and clay will help to make the soil of a better consistency than is either one of these alone. An application of lime to clay at the rate of about two tons per acre or about 100 pounds to a garden 25 x 40 feet in size, or even half that quantity and thoroughly mixed with the clay, will help in breaking it up, but the most important thing of all is the manure, preferably rotted manure if it can be obtained. Fifty tons per acre is none too heavy a dressing. When spread on the ground before digging in it can be from three to four inches thick without there being too much. This should be well worked through the upper foot of ground whether it be good soil, clay, or sand. If the manure is strawy it should be well dug in so that the straw will not be pulled out when the soil is raked. With a heavy annual application of manure even the poorest soils can be made to give good returns providing there is sufficient moisture in the soil which in many cities and towns can be applied artificially. Where no water is available very strawy manure applied to light soils is apt to make them too loose and they dry out easily and seed does not germinate well, hence well rotted manure is much better for such soils if it is available. The rolling of light soils where strawy manure has been used will be found useful in bringing the moisture to the surface and hastening the rotting of the straw. The great aim should be to eventually get the soil into such a condition that it will neither bake nor become hard in a dry time nor dry out readily and both of these conditions will be brought about by the liberal use of manure which adds plant food in an easily available form and helps to form humus which is so essential to a good physical condition of the soil. Clay soils should not be dug when they are very wet as they will bake badly, but by waiting until they are fairly dry they can be worked much better.

A spade, a hoe, a garden rake, and a digging fork are the four chief tools needed in gardening. Narrow hoes and rakes are best for small gardens, or well made children's tools, but with long handles. In stiff clays it may be found necessary to use the hoe after the soil has been dug in order to break it down, so that the rake can be used advantageously. The rake is now used to level the soil and to pulverize it still more. The surface soil should be made as level, smooth, and as fine as possible. If the soil for two or three inches down is in good condition a quick germination of the seed will usually be assured.

Planning the Garden.

Seed to be Sown:—

(early in spring), beets, carrots, lettuce, onions, parsnips, peas, radishes, kohlrabi, garden cress, salsify, spinach, parsley and leeks.

Seed sown:—

(in hot-beds, but plants will stand some frost), cabbage, cauliflower, celery.

Seed to be Sown:—

(after danger of frost is over, unless protected), beans, corn, cucumbers, melons, potatoes and squash. Seed of late cabbage is not sown until May but the plants will endure frost, and seeds of Swede turnips should be sown late, though turnips will stand frost.

Seed sown:—

(in hot-beds, but plants will not stand frost), melons, egg-plants, peppers.

Some plants require a much longer season than others, hence in planning the garden this should be taken into consideration.

It is desirable that a small vegetable garden should be arranged with a view to having a good assortment and a continuous supply. It should be planned so that vege-

tables having a long growing season, such as beets, carrots, parsnips and onions, would be grown at one side or end of the garden so that there will be no rows scattered here and there to make the garden look patchy during late summer. A small bed of asparagus and some rhubarb roots are desirable if the garden is to be permanent, and these should be put about a foot and a half from one of the boundaries.

Vegetables can be planted much closer in a garden than under field culture where most of the work is done with horses.

Following is a suggested arrangement of a small garden about 33 x 30 feet, but many other plans could be made. No provision is made for paths, but if a narrow path is found necessary it can be put in where it seems most convenient. The seeds of the kinds to be sown earliest are sown in one part of the garden and the later sowings and plantings in the other, so that the ground can be newly worked if necessary for the later sowings. For best results, the surface soil should be kept loose and free of weeds, by means of the rake and hoe, during the summer months.

SUGGESTED ARRANGEMENT FOR A SMALL GARDEN.

Row	Kind of Vegetable.	Seed required for 30-foot row.	Distance apart of rows.	Depth to sow seed.	Distance to thin plants.	Time required to develop for use. Based on results at Ottawa.	Yield per 30-foot row.
1.	<i>Sown or planted early.</i> Parsnip.....	1 pkt.	18 ins. from boundary.	$\frac{1}{2}$ inch.	2 ins. apart.	107 to 112 days.	60 to 80 lb.
2.	Beets.....	1 oz.	12 ins. from Row 1.	$\frac{1}{2}$ inch.	2 ins. apart, or thinned as ready.	53 to 70 days.	50 to 60 lb.
3.	Carrots.....	1 pkt.	12 ins. from Row 2.	$\frac{1}{2}$ inch.	1 $\frac{1}{2}$ ins. apart or thinned as ready.	64 to 76 days.	65 to 75 lb.
4.	Onions.....	$\frac{1}{2}$ oz.	12 ins. from Row 3.	$\frac{1}{2}$ inch.	1 in.	93 to 120 days.	40 to 60 lb.
5.	Onion Sets.....	1 $\frac{1}{2}$ lb.	12 ins. from Row 4.	2 ins.	Plant 2 ins. apart.	56 days.	40 to 60 lb.
6.	Early Cabbage and Cauliflower.....	12 plants of each.	15 ins. from Row 5.	Roots well covered.	Plant 15 ins. apart.	102 to 121 days.	3 to 5 lb. per head.
7.	Spinach, Mustard and Cress.....	1 pkt. of each.	15 ins. from Row 6.	$\frac{1}{2}$ inch.	4 to 6 ins. apart.	60 days.	Weight varies much.
8.	Lettuce and Radish, followed by Squash and Melons, (3 hills of each, 5 feet apart).....	1 pkt. of each.	12 ins. from Row 7.	$\frac{1}{2}$ and $\frac{1}{2}$ inch.	Lettuce 6 ins. Radish, thinned as ready.	50 to 70 days. 21 to 36 days. Muskmelons, 110 to 144 days. Watermelons, 96 to 161 days. Squash, 66 to 104 days.	Weight varies much.
9.	Dwarf Early Pea.	4 oz.	12 ins. from Row 8.	2 ins.	1 in. apart.	49 to 51 days.	6 to 7 qts. in pod.
10.	Second Early Pea	4 oz.	18 ins. from Row 9.	2 ins.	1 in. apart.	52 to 56 days.	"
11.	Late Pea (semi-dwarf) ..	4 oz.	18 ins. from Row 10.	2 ins.	1 in. apart.	63 to 71 days.	6 to 9 qts. in pod.
12.	Lettuce and Radish (second sowing of this. Might be a path).....	1 pkt. of each.	18 ins. from Row 11.	$\frac{1}{2}$ to $\frac{1}{2}$ inch.	As before for these.	As before.	Weight varies much.
13.	<i>Sown or planted after danger of frost is over.</i> Early Beans, $\frac{1}{2}$ row; Late Beans, $\frac{1}{2}$ row	2 oz. of each.	18 ins. from Row 12.	2 ins.	Plant 2 ins. apart.	(Early), 47 to 53 days. (Late), 66 to 76 days.	10 to 20 qts.

SUGGESTED ARRANGEMENT FOR A SMALL GARDEN—*Concluded.*

Row.	Kind of Vegetable.	Seed required for 30-foot row.	Distance apart of rows.	Depth to sow seed.	Distance to thin plants	Time required to develop for use. Based on results at Ottawa.	Yield per 30-foot row.
14.	Late Cabbage and Cauliflower.....	10 plants of each.	18 ins. from Row 13	Roots well covered.	18 ins. apart.	107 to 123 days.	4 to 6 lbs. per head.
15.	Celery (start plants early)	1 pkt.	24 ins. from Row 14.	$\frac{1}{2}$ inch.	Plant 5 ins. apart.	5 months.	12 to 19 ozs. per head.
16.	Swede Turnips, sow June 15 to July 1	1 pkt.	24 ins. from Row 15.	$\frac{1}{2}$ inch.	Thin to 5 to 7 ins. apart.	60 to 90 days.	60 to 80 lbs.
17.	Peppers and Egg Plant, or third sowing of lettuce and radish or more late cauliflower, or early sowing of parsley	1 pkt. of each.	18 ins. from Row 16.	Roots well covered.	Plants 15 ins. apart.	Peppers, 132 to 178 days. Egg Plants, 150 to 162 days.	Yield varies much.
18.	Tomatoes, trained to single stems and tied 5-foot stakes or wires..	1 pkt. or 15 plants.	24 ins. from Row 17.	Roots well covered.	Plants 2 feet apart.	108 to 179 days, depending on when started, and season.	100 to 150 lb.
19.	Early Corn, followed by late sowing of lettuce and radish.....	1 pkt.	36 ins. from Row 18.	2 ins.	Hills 3 feet apart, thin to 5 kernels per hill.	66 to 94 days	40 to 50 ears,
20.	Later corn, about 2 feet from boundary.....	1 pkt.	36 ins. from Row 19.	2 ins.	"	77 to 112 days.	"

Estimated cost of seeds and plants, \$2.30; estimated value of crop, \$25, or more.

In addition to these, Cucumbers can be grown over wire netting tacked to one of the fences. Melons, Cucumbers and Squash should be thinned to from two to six plants per hill.

List of Best Vegetables.

Asparagus.—Palmetto is proving a better variety than Conover Colossal for general planting, as it is not so subject to the disease known as Asparagus Rust. Argenteuil is also a good variety.

Beans.—Round Pod Kidney Wax and Wardwell Kidney Wax are two of the best yellow-podded or wax bush beans, and are both early. Hodson Wax has large pods. Stringless Green Pod, Early Red Valentine and Early Refugee are three good, green-podded varieties. Refugee or Thousand to One is one of the best later sorts. Among Lima beans, the dwarf, or bush forms are the most satisfactory.

Beets.—Early Model, Detroit Dark Red, Crosby Egyptian are some of the best.

Borecole or Kale.—Dwarf Green Curled Scotch.

Broccoli.—White Cape.

Brussels Sprouts.—Improved Dwarf. The dwarf varieties have been found more satisfactory than the tall-growing one.

Cabbage.—Early Jersey Wakefield, Copenhagen Market (early), Succession (medium), Danish Ballhead and Drumhead Savoy (late), Red Dutch (red) is a good list. Houser has been found freer from disease than most. For extra early use, Paris Market is desirable, being nearly a week earlier than Early Jersey Wakefield.

Cauliflower.—Early Dwarf Erfurt and Early Snowball.

Carrots.—Chantenay is one of the best, but if a good extra early sort is required, the Early Scarlet Horn can be planted with advantage. It is a small variety.

Celery.—Golden Self-Blanching (Paris Golden Yellow) (early), French Success, Noll Magnificent, Perfection Heartwell, Triumph, Winter Queen are all good late varieties. London is a good red one. White Plume is desirable for the prairies.

Corn.—Early Malcolm, Peep o' Day (extra early), Early Fordhook, Early Cory (early), Crosby Early, Golden Bantam, Metropolitan (second early), Perry Hybrid, Early Evergreen and Black Mexican (medium), Stowell Evergreen, Country Gentleman (late). In planting, the Country Gentleman should not be omitted, as it lengthens the season very considerably and is of fine quality. Golden Bantam is the best second early for home use. It is of excellent quality.

For the Prairie Provinces and other parts of Canada where the nights are cool, Squaw and Extra Early Adams, though not sweet varieties, develop better than others.

Cucumbers.—Peerless White Spine or White Spine, Davis Perfect, Cool and Crisp, and Giant Pera are some of the most satisfactory. Boston Pickling and Chicago Pickling are good pickling sorts.

Egg Plant.—New York Improved and Long Purple succeed best.

Lettuce.—Grand Rapids, Black-seeded Simpson (early curled), Iceberg, New York, Giant Crystal Head, Crisp as Ice, and Improved Hanson (curled cabbage), Improved Salamander (uncurled cabbage). Grand Rapids is the best variety for forcing. Iceberg remains headed longest in summer, and should always be planted. Trianon and Paris are two of the best Cos varieties.

Melons, Musk.—Long Island Beauty and Hackensack are two of the earliest and best of the Nutmeg type. Montreal is later, but of larger size and finer flavour. Emerald Gem and Paul Rose are two of the best yellow-fleshed melons.

Melons, Water.—Cole Early, Salzer Earliest, Ice Cream, Phinney Early are some of the most reliable.

Onions.—Yellow Globe Danvers and Large Red Wetherfield are two of the best and most reliable. Australian Brown is also good. Prize Taker is a good variety for transplanting.

Parsley.—Double Curled is as good as any.

Peppers.—Cayenne, Chili, Cardinal. The Early Neapolitan is one of the earliest of the large peppers.

Peas.—Gregory Surprise (extra early), Thos. Laxton, Gradus, American Wonder, Nott Excelsior, Sutton Early Giant (early), Sutton Excelsior, Premium Gem (second early), McLean Advancer, Heroine and Stratagem (medium to late). The foregoing varieties, not being tall growers, may be grown without supports. Quite Content, Telephone and Champion of England are three of the best tall-growing sorts.

Radishes.—Early: Scarlet White-tipped Turnip, Rosy Gem, French Breakfast, Red Rocket (red), Icicle (white). Late: White Strasburg, Long White Vienna. Winter: Long Black Spanish, Chinese Rose-coloured, New White Chinese or Celestial.

Rhubarb.—Linnæus, Victoria.

Salsify.—Long White, Sandwich Islands.

Spinach.—Victoria, Thickleaved.

Squash.—White Bush Scalloped, Long White Bush, Summer Crookneck. Late: Delicious, Hubbard.

Tomatoes.—Early: Alacrity, Sparks Earliana, Chalks Early Jewel, Bonny Best (scarlet). Medium: Matchless, Trophy (scarlet), Livingston Globe, Plentiful (purplish pink).

Turnips.—Early: Extra Early Milan, Red Top Strap Leaf. Early turnips are usually bitter to the taste and not desirable.

Swedes.—Champion Purple Top, Skirving Improved.

PROTECTING VEGETABLES FROM INJURIOUS INSECTS AND DISEASES.

Unless vegetables are protected from injurious insects and diseases, either by spraying or by poisoning in some other way or by mechanical devices, the vegetable grower is likely to lose part or all of the crop. Some kinds of vegetables suffer, as a rule, more than others.

Several different formulæ are recommended for some insects, in order to make it easier for those in small towns or out of the way places to obtain, at least, one good insecticide or fungicide.

CABBAGE, CAULIFLOWER, ONION, RADISH, TURNIP, Flea-beetle, caterpillars, aphids, root-maggots, cut-worms. Other vegetables may also have the same treatment for cut-worms.	<i>Paris green</i> , or <i>arsenate of lead</i> . For flea-beetle immediately plants appear above the ground.	<i>Pyrethrum</i> —dry mixture. For cabbage worms.	<i>Nicotine</i> or <i>Soap washes</i> . For aphids.
For root-maggots, <i>Tar felt paper discs</i> around stems of cauliflowers and cabbage. These should be put on immediately the plants are set out to prevent the fly from laying her eggs on the ground near the stem. The discs should lie flat on the ground and fit close to the stem. Insect powder or <i>hellebore</i> in water poured about the roots at intervals of a week, and <i>carbolic emulsion</i> have some effect in controlling root maggots of onions and radishes. Cut worms—Use <i>poisoned bran</i> for cut-worms. If scattered on surface of soil near plants to be protected the cut-worms will eat it in preference to the plants, and die.			
POTATO. Scab, rhizoctonia, blight and rot, insects.	Soak tubers in solution of <i>Corrosive sublimate</i> or <i>Formalin</i> . For scab.	<i>Paris green</i> . 8 ozs. or more to 40 galls. water; or <i>Arsenate of lead</i> , 3 lbs. to 40 galls. water or preferably 8 ozs. <i>Paris green</i> and 1½ lb. <i>Arsenate of lead</i> to 40 galls. water. For Colorado potato beetle.	<i>Poisoned Bordeaux</i> . For rot and beetles. From 15th July till end of season, 2 weeks apart. Keep foliage covered. <i>Bordeaux</i> for flea-beetle.
CELERY. Early and late blight.	Keep foliage constantly covered with <i>Bordeaux</i> throughout the season.		
TOMATO. Cut-worms.	Use <i>Poisoned bran</i> for cut-worms.		

INSECTICIDES

Internal Poisons (for Biting Insects.)

POISONED BRAN FOR CUT-WORMS.

Mix ½ to 1 pound of *Paris green* thoroughly with 50 pounds of slightly moistened bran, sweetened with a little molasses or sugar.

ARSENATE OF LEAD.

Arsenate of lead.	2 to 3 lb. paste or
Water.	1 to 1½ lb. dry.
Mix thoroughly before using.	40 gal.

PARIS GREEN.

Paris green.	2 lb.
Unslaked lime.	1 "
Water.	160 gal.

Dry mixture—1 pound *Paris green* with 50 pounds flour, land plaster, slaked lime or any other perfectly dry powder.

HELLEBORE.

(Keep in air tight vessel.)

White hellebore.	1 oz.
Water.	2 gal.

Or to be dusted undiluted over attacked plants.

For root maggots use 2 ounces of hellebore to 1 gallon water.

CARBOLIC EMULSION.

Hard soap, well sliced..	1 lb.
Crude carbolic acid..	1 pint.
Boiling water..	1 gal.

Dissolve the soap in water, then add the acid and churn violently with dasher. Before using dilute to 25 gallons.

CONTACT POISONS (FOR SUCKING INSECTS.)**PYRETHRUM (OR INSECT POWDER.)**

(Keep in air tight vessel.)

Pyrethrum powder (fresh)..	1 oz.
Water..	3 gal.

Dry mixture.—Mix thoroughly 1 part by weight of insect powder with 4 of cheap flour, and keep in a close vessel for 24 hours before dusting over plants attacked.

***NICOTINE SULPHATE.**

(Containing at least 40% nicotine.)

(For APHIS.)

Nicotine sulphate..	1 oz.
Water..	6½ gal. or 1 part to 800 of water.

It should be more concentrated for some species.

NICOTINE (FOR APHIS.)

Nicotine..	1 teaspoonful.
Water..	1 gal.

Even ordinary soap, that known as "Ivory" being good for the purpose, used at the rate of ½ to 1 a cake to a pail of water, will control some species of aphis.

* A preparation of this known as "Black Leaf 40" is offered for sale in Canada.

FUNGICIDES.**BORDEAUX MIXTURE (FOR FUNGI.)**

Copper sulphate (Bluestone)..	4 lb.
Unslaked lime..	4 "
Water (1 barrel)..	40 gal.

Dissolve the copper sulphate (by suspending it in a wooden or earthen vessel containing 4 or 5 or more gallons of water.) It will dissolve more quickly in warm water than in cold. Slake the lime in another vessel. If the lime, when slaked, is lumpy or granular, it should be strained through coarse sacking or a fine sieve. Pour the copper sulphate solution into a barrel, or it may be dissolved in this in the first place; half fill the barrel with water; dilute the slaked lime to half a barrel of water, and pour into the diluted copper sulphate solution, then stir thoroughly. It is then ready for use. (Never mix concentrated milk of lime and copper solution.)

A stock solution of copper sulphate and milk of lime may be prepared and kept in separate covered barrels throughout the spraying season. The quantities of copper sulphate, lime and water should be carefully noted. Bordeaux mixture deteriorates with age and should be used as soon as made.

To test Bordeaux mixture, let a drop of ferrocyanide of potassium solution fall into the mixture when ready. If the mixture turns reddish-brown, add more milk of lime until no change takes place.

POISONED BORDEAUX MIXTURE (FOR FUNGI AND LEAF-EATING INSECTS.)

To the 40 gallons of Bordeaux mixture prepared as above, add 4 to 8 ounces of Paris green, or 3 pounds of arsenate of lead paste, or 1½ pounds dry arsenate of lead.

FOR POTATO BLIGHT AND COLORADO POTATO BEETLES.

Instead of 4 pounds copper sulphate, use 6 pounds; and for potato beetles 8 ounces or more of Paris green, or 3 pounds arsenate of lead paste, or preferably 8 ounces Paris green and 1½ pounds dry arsenate of lead to 40 gallons water.

GROWING POTATOES FOR HOME USE OR MARKET.

One of the most satisfactory crops to grow in the garden or on land which would otherwise be vacant is the potato, for not only does the grower produce food for his daily needs, but he is working with a crop which responds to good cultivation better than almost any other. On a small plot of ground 50 by 100 feet or less, one is able to grow twenty, or more, bags of potatoes, and even if only twelve or fifteen are obtained, there will be sufficient to keep a large family in potatoes for most of the year. Potatoes have been grown in a small plot at the rate of over 700 bushels per acre at the Central Experimental Farm, Ottawa, Canada, but so great is the difference in the yield of varieties that while one gave this large yield, another, planted at the same time and in the same kind of soil, yielded only 154 bushels. It will thus be seen how important it is to plant a productive variety.

Varieties.

A variety which is productive in one place may not be productive in another. In some places the season is too short for the later varieties, and as a result the crop is

small. A variety which at one time did well in a certain locality, may become unprofitable through being diseased or becoming weak in vitality owing to unfavourable seasons. In such a case a change of seed is very desirable. As showing the advantage of a change of seed, it may be stated that in 1910 new seed potatoes of eleven varieties from Indian Head, Saskatchewan, grown at Ottawa, yielded on the average at the rate of 368 bushels per acre, while seed potatoes which had been weakened in vitality at Ottawa by unfavourable seasons averaged only 97 bushels per acre. Some of the most reliable early varieties are Irish Cobbler, Eureka Extra Early, Rochester Rose, Bovee, and Early Ohio; and of medium or later varieties, Carman No. 1, Vermont Gold Coin, Green Mountain and Wee MacGregor. British varieties which have done exceptionally well in Canada and have proved productive are, Table Talk, Davies Warrior, Dalmeny Hero and Dalmeny Regent. But if the seed is free from disease and of strong vitality, most varieties are capable of producing good crops, hence it is better to plant any variety than none at all.

Kind of Seed to Plant.

The conditions the potatoes are in when the time for planting arrives is very important. If possible, potatoes should be prevented from sprouting before they are planted, unless sprouted in the light, as described later on; and to prevent sprouting it is desirable to keep them in a cool cellar where the temperature does not go much above 35 degrees F. nor below 33 degrees F. The cooler potatoes are kept without freezing the better. When potatoes are kept in a warm, moist cellar, as they so often are, they sprout and the shoots take from the tubers both plant food and moisture, and as these sprouts are usually broken when handling the potatoes, the new shoots which are made when the potato starts to grow in the field have less moisture and less plant food to draw upon, and do not make as vigorous a growth as they otherwise would, and the yield is smaller.

Many experiments have been tried to determine the best kinds of sets to plant, and on the average it has been found that good marketable tubers cut into pieces so as to have at least three good eyes to a piece are the best. If cut sets are found to rot after planting, use whole potatoes for seed, as they will not rot as readily. In very favourable seasons, single eyes or buds gouged out with very little flesh have given fair returns. While it is usually not desirable to use small potatoes for seed, if the season is favourable, good results are sometimes obtained from such, and with the high cost of seed in 1917 none of it should be wasted. If dry weather sets in after planting, the sets with the greatest amount of flesh have the best chance, hence it is safer to use large pieces on this account. If one had very few potatoes and wishes to make the most of them, they may be mixed with moist chopped straw, moss or other material in a warm place for a few days before planting, care being taken not to break off the sprouts. Roots will soon form and the sprouts may then be broken off and planted carefully in well prepared soil, when if the soil remains moist the plants will develop well. It has been found to be a great advantage to "sprout" potatoes in order to have the tubers ready for use earlier than when treated in the ordinary way, and where the season is short to obtain large crops. Medium sized potatoes are selected before they have begun to sprout and placed in single layers in shallow boxes or trays, with the seed end up. The boxes are then put in a bright, airy, cool place where the temperature is low enough to prevent sprouting. In a few days the potatoes will turn green and the skin become tougher. The potatoes are now given a little more heat, but still kept in a bright place. From the seed end will now develop two or three strong sprouts, and the meaning of exposing the potatoes at first to toughen the skin is now apparent, for most of the eyes do not sprout, and practically the whole strength of the potato is concentrated in a few sprouts at the end. This is what is desired, as the fewer sprouts there are the larger proportion of marketable potatoes there will be in the crop from them. The potatoes are planted whole. If the potatoes are given plenty of light and the place where they are kept fairly cool, the sprouts will become very sturdy and strongly attached to the tuber, and will not be broken off in handling, unless very carelessly used. Tubers will develop more quickly from sprouts made slowly in a bright, cool place than from sprouts which have grown rapidly in a dark place, and, furthermore, the yields will be much heavier. Potatoes which sprout in the dark are very difficult to handle as the sprouts break off very easily. It is not absolutely necessary to place the potatoes with the seed ends up, as very satisfactory results are obtained even when potatoes are emptied indiscriminately into shallow boxes or trays and then treated as already described. The sprouts should be about two inches in length at time of planting. If longer, the sets are more difficult to handle.

Soil.

The most suitable soil for potatoes is a rich, deep, friable, warm sandy loam with good natural drainage, a constant though not too great a supply of moisture, and well supplied with decayed or decaying vegetable matter. They will, however, succeed well on a great variety of soils. The warmest and best drained soils that can be obtained, should be chosen for the early potatoes, and the sets should be planted shallow, so that they will get the advantage of the heat from the surface soil.

Preparation of the Soil.

The more thoroughly the soil is prepared the better the results will be. Loose, well pulverised soil is particularly desirable, for potatoes. While heavy manuring with barnyard manure is not recommended for potatoes, the use of a moderate quantity is advised. A good way to apply this is on clover sod in autumn. The sod, with the manure, to be turned under in the spring. If manure is used in the spring it should, if it is possible to obtain it, be well rotted and mixed with the soil, not put in the drills with the potatoes. Chemical fertilizer, if used, should be applied at the rate of 500 to 800 lbs. or more of special potato fertilizer, per acre.

Planting.

As a slight frost will injure the tops, planting should be delayed to within a week of the time when the last frost is likely to occur. Where extra early potatoes are desired, chances are taken and potatoes are planted earlier; and, should a frost threaten, the young plants, if they are above ground, may be protected by covering them with soil. The best results have been obtained in Canada by planting the potato sets four to five inches deep for the main crop, and twelve to fourteen inches apart in rows two and one-half feet apart. As has already been stated, potatoes planted early, or if planted in soil which is too wet and cold for best results, may be planted shallower, say, an inch deep where the soil is warmer than it is further down. The sets should be covered as soon as possible after planting, so that they will not dry in the sun.

Cultivation.

In field culture much time will be saved in hoeing later in the season, if the soil is harrowed, to destroy weeds just as the potatoes are beginning to come up, and at this time many weeds will have germinated. If the potatoes are in a garden it may be raked over for the same purpose. As a rule, the crop of potatoes will increase in proportion to the number of times the potatoes are cultivated during the growing season. There was found to be an increase of 40 bushels per acre in a crop of potatoes cultivated six times over those cultivated three times. Level cultivation will sometimes give better results than moulding or hilling up, and sometimes the results are not so good. Where the soil is stiff, or where the soil is wet, moulding, or ridging, is desirable, but where the soil is loose and liable to suffer from drought in a dry time, level culture is recommended. Where the soil is both loose and moist, and where the climate is moist, ridging will usually give best results. As the crop of potatoes will be much larger if the tops can be kept green until frost than if they were destroyed by insects or diseases in summer, it is important, in addition to thorough cultivation, to protect the tops from injury.

Protection of Potatoes from Insects and Diseases.

The Colorado potato beetle and the cucumber flea beetle are the commonest insects which injure the potato tops. The former can be readily killed with Paris green in the proportion of 8 ounces to 12 ounces to a forty gallon barrel of water, or with arsenate of lead in the proportion of 2 to 3 lbs. paste or 1 to 1½ lbs. dry to 40 gallons of water. A mixture of both in the proportion of 8 ounces of Paris green and 1½ pounds of paste arsenate of lead to 40 gallons of water will kill quickly and adhere well to the foliage. These poisons will, to some extent, check the cucumber flea beetle, but, in addition to them, a better preventive is a covering of Bordeaux mixture on the foliage. The Bordeaux mixture should also be used to control the early and late blights of potatoes, the latter disease causing rot. These are two of the commonest diseases. To control the early and late blight of potatoes spraying with Bordeaux mixture should be begun before the disease appears and the plants kept covered until autumn. From three to four sprayings will be required, the number depending on the weather. Taking the average of three years, the increase of yield from spraying with Bordeaux mixture was at the rate of 94 bushels per acre. In some years it is much larger. Bordeaux mixture is made in the proportion of 6 lbs. bluestone, 4 lbs. lime and 40 gallons of water. Spraying mixtures should be used at the proper time and thoroughly, if good, results may be expected.

Digging and Storing.

Potatoes should be dug in dry weather, so that they will be dry when they are taken into the cellar. If they are diseased, the disease will not spread so rapidly among dry potatoes. If the potatoes are known to be diseased in the field, it is best to leave them in the ground as long as possible, so that diseased potatoes may more readily be seen and separated from sound ones before they are taken into the cellar. Potatoes should be stored for best results in a dry, cool, well ventilated cellar and kept at a temperature between 33 deg. F. and 35 deg. F., if possible.